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(71)Applicant : NIPPON OIL CO LTD

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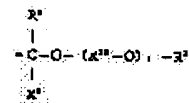
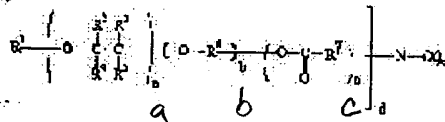
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(54) ADDITIVE FOR FUEL OIL, AND FUEL OIL COMPOSITION CONTAINING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain the subject additive, composed of a specific nitrogen- containing compound, excellent in solubility in fuel oil, particularly excellent in capacity of cleaning engine intake systems and combustion chambers, showing no deterioration in performance while the engine is cool, and forming no sludge.

SOLUTION: This additive is composed of a nitrogen-containing compound shown by formula I [R1 is H, or a 1-30C hydrocarbon; R2 to R5 are each H, a 1-10C hydrocarbon, or a group shown by formula II (R8 and R9 are each H, a 1-10C hydrocarbon or the like; R10 is a 2-6C alkylene or the like; R11 is H or a 1-30C hydrocarbon; and (f) is 0 to 50), wherein at least one of R2 to R5 is the group shown by the formula II; R6 and R7 are each a 1-6C alkylene; X is H or a 1-30C hydrocarbon, R12-OH (R12 is a 1-6C alkylene) or the like; and (a) is 1 to 100; (b) is 0 to 100, (a+b) is 1 to 200, (c) is 0 or 1, (d) is 1 to 3, (e) is 0 to 2, and (d+e) is 3].



LEGAL STATUS

[Date of request for examination]

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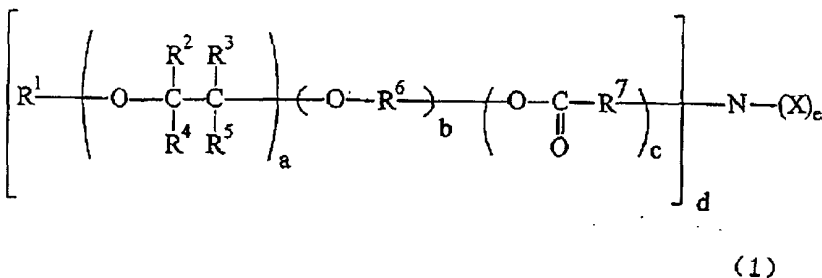
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2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

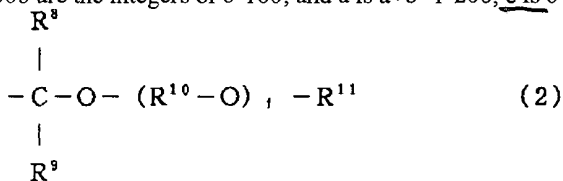
[Claim(s)]

[Claim 1] The fuel oil additive which consists of a nitrogen-containing compound expressed with the following general formula (1).

[Formula 1]



In [general formula (1), R¹ shows hydrogen or the hydrocarbon group of carbon numbers 1-30. R², R³, and R⁴ And R⁵ The basis individually expressed with the hydrocarbon group or the following general formula (2) of hydrogen and carbon numbers 1-10, respectively is shown. At least one of (however R², R³, R⁴, and R⁵ A general formula (it is the basis expressed with 2)), R⁶ And R⁷ The alkylene machine of carbon numbers 1-6 is shown, X shows the basis chosen from the following A groups, 1-100b are the integers of 0-100, and a is a+b=1-200, c is 0 or 1, and d is the integer of 0-2, and 1-3e are d+e=3.]

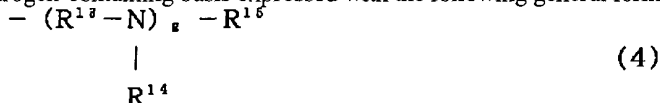


In [general formula (2), R⁸ and R⁹ show hydrogen, the hydrocarbon group of carbon numbers 1-10, or the alkoxyalkyl group of carbon numbers 2-10 individually, respectively, R¹⁰ shows an alkylene machine with 4-10 total carbons which show the alkylene machine of carbon numbers 2-6, or have an alkoxyalkyl group as a substituent, R¹¹ shows hydrogen or the hydrocarbon group of carbon numbers 1-30, and f shows the integer of 0-50.

A group A1: hydrogen A2: -- alkanol machine expressed with the hydrocarbon-group A3: following general formula (3) of carbon numbers 1-30--R¹²:OH-(3)-

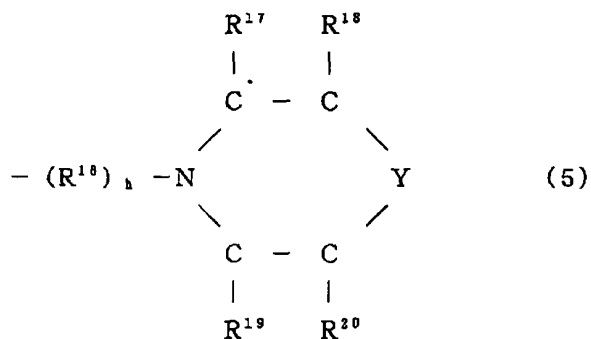
In [general formula (3), R¹² shows the alkylene machine of carbon numbers 1-6.]

A4: The nitrogen-containing basis expressed with the following general formula (4).



In [general formula (4), R¹³ shows the alkylene machine of carbon numbers 2-6, R¹⁴ shows the basis expressed with the alkyl group or the above-mentioned general formula (3) of hydrogen and carbon numbers 1-4, R¹⁵ shows the basis expressed with the hydrocarbon group or the above-mentioned general formula (3) of hydrogen and carbon numbers 1-30, and g shows the integer of 1-5.]

A5: The basis expressed with the following general formula (5).



In the [above-mentioned formula (5)] R16 the alkylene machine of carbon numbers 2-6 Separately R17, R18, R19, and R20, respectively the hydrocarbon group or hydroxyl group of hydrogen and carbon numbers 1-10 The methylene group by which Y was replaced with the methylene group, the hydrocarbon group of carbon numbers 1-10, or the hydroxyl group, The imino group or oxygen replaced with the imino group, the hydrocarbon group of carbon numbers 1-10, or the hydroxyl group is shown, in the case of e= 1, h is 1, and, in the case of e= 2, it is 0 or 1 (however, in the case of h= 0, N (nitrogen) in a general formula (5) corresponds to N (nitrogen) in a general formula (1).).

[Claim 2] The fuel oil constituent which comes to contain the nitrogen-containing compound expressed with a general formula (1) according to claim 1 by the gasoline for internal combustion engines.

[Translation done.]

L1 ANSWER 2 OF 2 WPIDS (C) 2002 THOMSON DERWENT
 AN 1999-254276 [21] WPIDS
 DNC C1999-074312
 TI Fuel oil additive comprising an N-containing compound and fuel oil composition.
 DC A25 A95 E19 H06
 IN HAJI, K; NAGAO, M; OMATA, T; YOSHII, T
 PA (NIOC) NIPPON OIL KK; (NIOC) NIPPON OIL CO LTD
 CYC 81
 PI WO 9913027 A1 19990318 (199921)* JA 86p C10L001-22 <--
 RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
 OA PT SD SE SZ UG ZW
 W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE
 GH GM HR HU ID IL IS KE KG KR KZ LC LK LR LS LT LU LV MD MG MK MN
 MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ
 VN YU ZW
 JP 11080758 A 19990326 (199923) 22p C10L001-22
 JP 11140468 A 19990525 (199931) 25p C10L001-22
 AU 9890024 A 19990329 (199932) C10L001-22
 ADT WO 9913027 A1 WO 1998-JP4100 19980911; JP 11080758 A JP 1997-267714
 19970911; JP 11140468 A JP 1997-327145 19971112; AU 9890024 A AU
 1998-90024 19980911
 FDT AU 9890024 A Based on WO 9913027
 PRAI JP 1997-327145 19971112; JP 1997-267714 19970911
 IC ICM C10L001-22
 ICS C10L010-04
 AB WO 9913027 A UPAB: 20011203
 NOVELTY - A fuel oil additive comprising an N-containing compound is new.
 A fuel oil composition containing this fuel oil additive is new.
 DETAILED DESCRIPTION - The fuel oil additive is represented by
 general formula (1);

$$R1 = H \text{ or } 1 \text{ approx. } 30C\text{-hydrocarbon};$$

$$R2, R3, R4, R6 = H, 1 \text{ approx. } 10C\text{-hydrocarbon or gp represented by}$$

$$-C(R7)(R8)-O-(R9-O)-f-R10 \text{ (2) and at least one of } R5 \text{ is gp (2);}$$

$$R6 = R2 \text{ approx. } 1 \text{ approx. } 6C\text{-alkylene};$$

$$Z' = a \text{ group represented by } -O-C(=O)-R11 \text{ (3), } -O-C(=O)-O-R12- \text{ (4),}$$

$$-O-R13-C(=O)-O-R14 \text{ (5);}$$

$$X = \text{one group selected from (A1) approx. (A6);}$$

$$a = \text{integer between 1 and 100;}$$

$$b = \text{integer between 0 and 100 and } a + b = 1 \text{ approx. } 200;$$

$$c = 0 \text{ or } 1;$$

$$d = 1, 2 \text{ or } 3;$$

$$e = 0, 1, \text{ or } 2 \text{ and } de + e = 3, \text{ when } Z = (4) \text{ or } (5), X \text{ must not be}$$

$$A3 \text{ for } e = 1, \text{ and one of } X \text{ is } A3 \text{ and the other } X \text{ is } A2 \text{ or } A3 \text{ for } e = 2;$$

$$R7, R8 = H, 1 \text{ approx. } 10C\text{-hydrocarbon or } 2 \text{ approx. } 10C\text{-alkoxyalkyl}$$

$$\text{group;}$$

$$r9 = 2 \text{ approx. } 6C\text{-alkylene or } 4 \text{ approx. } 10C\text{-alkylene group}$$

$$\text{substituted with an alkoxyalkyl group;}$$

$$R10 = H \text{ or } 1 \text{ approx. } 30C\text{-hydrocarbon};$$

$$f = \text{integer between 0 and 50;}$$

$$R11 \text{ approx. } R14 = 1 \text{ approx. } 6C \text{ alkylene};$$

$$A1 = H;$$

$$A2 = 1 \text{ approx. } 30C\text{-hydrocarbon};$$

$$A3 = \text{alcohol represented by } -R15-OH \text{ (6);}$$

$$A4 = N\text{-containing group represented by } -(R16-N(R17)g-R18 \text{ (7);}$$

$$A5 = \text{group represented by (8);}$$

$$R15 = 1 \text{ approx. } 6C \text{ alkylene gp;}$$

R16 = 2 approx. 6C-alkylene;
 R17 = H, alkylene or group (6);
 R18 = H or 1 approx. 30C-hydrocarbon or group (6);
 R19 = 2 approx. 6C-alkylene;
 R20 approx. R23 = H, 1 approx. 10C- hydrocarbon or OH;
 Y = methylene, methylene substituted with 1 approx. 10C-hydrocarbon
 group or OH, imino, imino group substituted with 1 approx. 10C-hydrocarbon
 group or OH;
 h = 1 for e=1, h = 0 or 1 for e = 2.
 The fuel oil composition contains 0.005 approx. 10 mass% of the
 above
 N-containing compound.
 USE - The fuel oil additive is used for a fuel oil composition.
 ADVANTAGE - The fuel oil additive has an excellent effect of
 cleaning
 the intake system and combustion chamber of a gasoline engine. The fuel
 oil composition is free from lowering performance of the engine and
 sludging even when the engine is cold.
 Dwg.0/0
 FS CPI
 FA AB; GI; DCN
 MC CPI: A05-H01; A12-T03A; E10-B03B; H06-D